DESIGN PROPOSITIONS AND PROCESS STEPS FOR CURRICULUM DESIGN IN PROFESSIONAL HIGHER EDUCATION

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Abstract

Recent projections published by the EU show that in the years up to 2025, half of the jobs will require high level qualifications, while 65% of children entering primary school will be working in occupations that do not yet exist [1]. This implies higher demands on professionals as their tasks are becoming increasingly complex [2].

Higher education has to prepare students for this challenging future. Next to professional skills, higher education is expected to educate on problem solving, reasoning, decision making and creativity to ensure that professionals can flexibly adjust to rapid changes in their environment [3]. It is irrelevant to focus on the transfer of knowledge, rather on how students can use this information in their profession. It has been argued that students have to learn in an authentic context to facilitate better transfer for the student [4, 5, 6, 7] while learning knowledge, attitudes and skills in an integrated way [8].

We developed 4 design propositions leading to 8 process steps that guide professionals towards developing future proof sustainable curriculum. Our process of implementation integrates well established insights from the literature as well as own field tested propositions in our process-steps of curriculum design. Doing so, we connect practice and academia through the development of actionable knowledge grounded in the empirical evaluation of how designs work in the field [10]. The process-steps where tested within several professional training programs (bachelor, postgraduate, …) in our institution.

Keywords: curriculum development, curriculum design, higher education, learning outcomes, outcome based curriculum, design thinking, educational development, case study.

1 INTRODUCTION

The fourth industrial revolution will change fundamentally the way we live and work. As a result, numerous professions will change deeply, disappear or originate [1]. Recent projections published by the EU show that in the years up to 2025, about half of the jobs will require high-level qualifications, while 65% of children entering primary school will be working in occupations that do not yet exist [1]. This implies higher demands on professionals as their tasks are becoming increasingly complex [2].

Higher education has to prepare students for this challenging future. Next to professional skills, higher education is expected to educate on problem solving, reasoning, decision making and creativity to ensure that professionals can flexibly adjust to rapid changes in their environment [3]. It is irrelevant to focus on the transfer of knowledge, rather on how students can use this information in their profession. It has been argued that students have to learn in an authentic context to facilitate better transfer for the student [4, 5, 6, 7] while learning knowledge, attitudes and skills in an integrated way [8].

As members of an educational development unit of Belgian higher education institution we have to support our teaching staff in the process of building curricula that are future proof for this challenging future. To date, most literature focuses on the design of single courses and general pedagogical principles but fails to inform on how to practically designing complete outcome based curricula on professional higher education level (EQF level 5 and 6). Our proposal wants to bridge this gap through design science research [9, 10] at a university of applied sciences in Belgium. We asked the following question: How do we design supported and sustainable curricula that are directed towards learning outcomes?
We do not find one, all-encompassing definition of ‘curriculum’ in literature. Different definitions of ‘curriculum’ are given [11]:

- ‘a coherent and structured set of educational content (courses, modules, etc.) covered by a programme and, when completed successfully, leading to a degree’. [12]
- ‘the curriculum of a school, or a course, or a classroom can be conceived of as a series of planned events that are intended to have educational consequences for one or more students’. [13]
- ‘essentially a plan to support learning. It consists of objectives to focus learning; three types of decisions (1) selection and organisation of content, (2) choice of learning experiences that one wants to provoke so that the contents are appropriately manipulated, (3) a plan containing the optimal learning conditions’. [14]

With our curriculum design, we want to focus on a definition stating the curriculum as a structured programme and plan that encourages learning and leads to a bachelor [11].

2 METHODOLOGY

As stated above, most literature focuses on the design of single courses and general pedagogical principles but fails to inform on how to practically designing complete curricula on professional higher education level (EQF level 5 and 6). At University College Ghent we have a long-term experience in curriculum design. Through a design thinking approach, we developed educational design propositions that are both grounded as well as field-tested interventions based on our long-term experience in curriculum design [15]. We integrated both well-established insights from the literature as well as own field tested propositions in our process steps of curriculum design which we describe in our case study. Second, we propose a process that is tested in practice for the challenging curriculum design process. The process-steps where tested in our university of applied sciences within several professional training programs (bachelor, postgraduates, ...).

We want to emphasize the fact that we designed our process-steps throughout a practitioners perspective. In our educational development unit we do not have academic researchers in education.

We follow broadly the design science research approach [9, 10]. Through this process of strategy by design we developed 4 design propositions leading to 8 process steps that guide professionals towards a sustainable outcome orientated curriculum. They offer key building blocks towards developing future proof sustainable curricula. An essential element is motivating and involving teaching staff within the process of curriculum design.

Using the design approach allows to examine contexts in fine-grained detail and explain why certain design parameters work [9]. Design is based on pragmatism: Three values and ideas define the content dimension of design inquiry: (1) each situation is unique; (2) focus on purposes and ideal solutions; and (3) apply systems thinking [15]. Four other ideas define the values and ideas regarding the process of design: (1) limited information; (2) participation and involvement in decision making and implementation; (3) discourse as medium for intervention; and (4) pragmatic experimentation [15].

Design propositions involve general knowledge on general solution concepts for types of field problems. In actual solution design, a practitioner has to choose a fitting solution concept and has to contextualize it for the specific setting. Design propositions are not developed for the layman but for the professional [10, Romme, 2003]. Furthermore, design propositions have to be tested to develop further and adoptions are possible. The logic of the design proposition is, “if you want to achieve Y in situation Z, then apply intervention X” [10]. The most informative type of design propositions is the field-tested and grounded one. A design proposition is “field tested” if it is tested in its intended field of application. A design proposition is “grounded” if it is known why, through what mechanisms, its applications produces the predicted outcomes [10].

During each curriculum development peers, staff members of the educational development unit, would reexamine the propositions we offered [9]. This is so called beta-testing, where the design propositions are reexamined by others than the original developers of the proposition [10].
3 RESULTS

We developed 4 design propositions leading to 8 process steps that guide professionals towards a sustainable outcome-orientated curriculum. Those design propositions and process steps are developed and tested during our experience of previous curriculum design of the programs bachelor of Nursing, Office management, Nutrition and dietetics and three teacher programs.

Finally we tested the propositions and process steps during the curriculum development of the bachelor of Retail management at University College Ghent.

Retail management counts 113 students in year 2018 and is a fairly new programme of the University College Ghent. They started in year 2011 and are a unique programme in Belgium. There are 21 team teachers.

The process of curriculum design started in 2016 and finished in December 2018. The curriculum is designed by a curriculum steering committee.

The programme designed their curriculum by 8 process steps accompanied by a senior staff member of the educational development unit of the University College Ghent, as shown below in Fig. 1.

<table>
<thead>
<tr>
<th>1. Create the (pre)conditions and context to develop bottom-up a curriculum that is outcome-based and sustainable. (follow step 1, 2 &amp; 3)</th>
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<tbody>
<tr>
<td>01 Analyze the context of the curriculum</td>
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<td>02 Define profile and learning outcomes</td>
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<td>03 Determine the educational concept</td>
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<td>04 Determine learning outcome paths</td>
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<tr>
<td>2. Create a curriculum based on (pre)conditions and context with constant focus on the learning outcomes through learning outcome paths.</td>
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<td>05 Fill in the learning outcome paths</td>
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<td>06 Make building blocks and align them</td>
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<td>07 Create course units</td>
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<td>08 Follow up, evaluate and adjust</td>
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<td>3. Create course units (incl. teaching and assessment formats) based on the learning outcomes to provide and ensure a gradual composition. (follow step 5, 6 and 7)</td>
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<td>4. Provide a system for the follow up, evaluation and redirection to guarantee a consistent outcome based curriculum.</td>
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Figure 1. Design propositions and process steps of the process of curriculum development at University College Ghent

Retail management ran through the process steps and designed a unique curriculum in December 2018. The curriculum is structured through learning outcome paths. Learning outcome paths differs from regular learning paths, which are content driven. Learning outcome paths are learning outcome-based and authentic and allow students to learn in an authentic context to facilitate better transfer for the student [4, 5, 6, 7] while learning knowledge, attitudes and skills in an integrated way [8].

We believe this transfer is facilitated when course units are fully organised in dedication to the learning outcomes of a program. As a result, the program contributes to the learning outcomes as opposed to a content or one aspect of the content. Thus, the program is integrated. [6] Each course unit is a building block within a learning outcome path and is dedicated to achieve the learning outcomes attached to the path. Each learning outcome path shows a complete, but simplified, idea of the reality [3].

To engage team members of the program, the curriculum is designed by a curriculum steering committee with representatives of the teacher staff. The curriculum will be implemented in October 2019.
4 CONCLUSIONS

The adaption of the process steps for curriculum design of the University college Ghent will never be completed. The design propositions have to be tested, and re-tested, to develop further. Thus adaptations are possible and necessary. Following the context-intervention-mechanisms-outcome (CIMO-technique [16]) peers re-examined the propositions we offered [9].

We have come to believe that our process steps have led to sustainable curricula that are learning outcome-orientated and not easily outdated. In our curricula developed in line with these process steps, the relationship between the courses or modules and their relevance became more explicit for students and instructors. The process of curriculum design supports students in developing the learning outcomes and facilitates a better transfer of learning that lasts. Furthermore, following the process supported curricula were developed through cooperation of the teaching staff.

Doing so, we connect practice and academia through the development of actionable knowledge grounded in the empirical evaluation of how designs work in the field [10].

The most challenging aspects of our process of curriculum design was engaging teacher staff and students. The process requires a mind-shift in thinking about and developing a new outcome-orientated curriculum. Teaching staff had to reevaluate the relevance and content of their courses based on the learning outcomes of the entire program.

Furthermore, curriculum design means dealing with practical limitations (e.g., budget, time, infrastructure, prerequisites of students). On the one hand the practical limitations restrict the creativity in the design process. On the other hand teaching staff has to develop strategies to overcome these practical limitations.

REFERENCES


